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XXVI. *Observations on the Hirudo complanata, and Hirudo stagnalis, now formed into a distinct genus under the name, GLOSSOPORA. By Dr. Johnson, of Bristol. Communicated by Sir Everard Home, Bart. V. P. R. S.*

Read June 26, 1817.

I BEG leave to lay before the Society, a few remarks on the *Hirudo complanata* and *Hirudo stagnalis*; animals that have been hitherto, but injudiciously, retained in the genus *HIRUDO*.

From the circumstance, in which they differ more particularly from the leech, they are now formed into a distinct genus, under the term of *Glossopora*.

These animals resemble the leech,

- a. In the body being furnished with a series of rings.
- b. In locomotion being effected by the alternate attachment of the head and tail.
- c. In the division of one general stomach into several lateral cells or partitions.

These animals differ from the leech,

- a. In the mouth being furnished with a projectile tubular tongue.
- b. In the body being nearly flattened, and pyriform.
- c. In having an abdominal pouch, or cavity, for the reception of their young.

The genus which they now form, takes the name (from γλῶσσα, a tongue, and πῶρος, an aperture) of *GLOSSOPORA*.

CHARACTER GENERIS.

Corpus subovatum, depressum, caput acuminatum, lingua tubulata resiliens, os caudamque alterne affigendo progrediens.

G. tuberculata: *Glossopora dilatata, supra cinerea linea duplici tuberculata, subtus grisea, atomis nigris innumeris.*

LINNÆUS. *Syst. Nat.* XII. 2. p. 1079. n. 6.

———— *Faun. Suec.* 2082, *Hirudo depressa ovato-oblonga interaneis fuscis pinnatis pellucentibus.*

HILL. *Hist. Anim.* p. 16. *Hirudo lateribus attenuatis.*

BERGMANN. *Act. Stockh.* 1757, Tab. 6. Fig. 12, 14. *Hirudo sexoculata.*

MULLER. *Hist. Verm.* 2. n. 157, p. 47. *Hirudo complanata.*

G. punctata: *Glossopora gracilis, cinereo-viridis, punctis plurimis subnigris.*

LINNÆUS. *Syst. Nat.* XII. 2. p. 1079. n. 5.

———— *Faun. Suec.* 2081. *Hirudo (stagnalis) depressa nigra, abdomine subcinereo.*

BERGMANN. *Act. Stockh.* 1757, n. 4. Tab. 6. Fig. 9—11. *Hirudo binoculata.*

MULLER. *Hist. Verm.* 2. n. 171. p. 41. *Hirudo bioculata.*

I am of opinion, that the *Hirudo circulans* described by Mr. SOWERBY,* and the *Hirudo crenata* by the Rev. WILLIAM KIRBY,† belong to this genus; but having had no opportunity of seeing either, I cannot determine whether or not they possess the tubular tongue.

* British Miscellany, Tab. 76.

† Linn. Trans. vol. ii. p. 316.

The *Hirudo Hyalina* which, MULLER observes, has a flattened body, and carries its young in a pouch, and the *Hirudo tessulata* of the same author, will, I think, also be found upon examination, to belong to this new genus.

The tubular tongue very seldom falls within our view; hence our surprise is the less, that it should so long have escaped notice. At the time I first observed it, I was unacquainted with any author, who had mentioned it. On my referring, however, to BERGMANN's account of the *Hirudo sexoculata*, (now *G. tuberculata*) I find it there noticed, not as a tongue, but as a slender body, of a whitish colour, occasionally projected from the mouth; of the use of which he confesses himself to be ignorant. I give his words, " *Utur munnen har jag atskille gånger sett uträckas en blek, smal lem, hvars mytta är mig obekant.*"* MULLER mentions that he never witnessed (although he frequently looked for it) the body which BERGMANN saw the *Hirudo sexoculata* thrust from its mouth: but he once observed the *Hirudo vulgaris* protrude a similar organ, when, he says, this assertion of BERGMANN came across his mind. On his observing it, however, more narrowly, it proved to be a small aquatic worm that the animal had swallowed and afterwards rejected. This readily accounts, he adds, for the mistake into which BERGMANN has fallen.

In stepping forward to support BERGMANN, I am only doing an act of justice to the merits of an accurate and intelligent observer.

Having had the *G. tuberculata* and *G. punctata* under my

* Stockholm Transactions, for 1757, p. 313.

daily notice for a period of at least six months, I may, I presume, speak with some decision on this point. It may seem perhaps unnecessary to add, that I possess an elegant preparation, showing this tongue (protruded from the mouth) filled with mercury. It is of a cartilaginous structure, and admits of great flexibility. It is in length about one-eighth of an inch, and is seen, delineated (magnified) in Fig. 5. (Pl. XVII.)

The *G. tuberculata*, is about half an inch in length, but when fully extended, one inch. It is commonly found in rivulets, attached to pieces of wood, stones, &c. A delineation is given of its natural size, in a front and back view, in Fig. 1, 2, 3, 4. It possesses great transparency, and has a fine glossy vitreous appearance. It is convex above, flattened beneath, and somewhat resembles a compressed pear, the tail being very broad, and the head tapering towards the extremity, in which may be seen six eyes, (Fig. 9. *b*) disposed in two longitudinal rows. The sides or margin of the body are serrated. The back is usually of a brown colour, with lighter or darker patches, ornamented in the middle with a double longitudinal row of white tubercles. (Fig. 9. *c*.) These tubercles are connected together by two black longitudinal lines, and are seldom apparent, unless the animal is at rest. The belly is generally of one uniform colour, chiefly grey, with a slight double black line running longitudinally in the centre.

When this animal is in motion, (to which it is much averse, seldom quitting the spot on which it may be affixed,) it is observed to throw forward its head to the greatest point of extension, and then attach itself by means of the sucker ter-

minating that extremity. Thus securing its hold, it draws up the tail, when the back describes an arch, as in Fig. 6. The tail is then fixed by a similar sucker, and the head is again extended. Now and then it supports itself by the tail, the head waving to and fro, and occasionally buries its head under the abdomen, somewhat after the manner of an *oniscus*. This is seen in Fig. 7.

The *G. punctata* is much smaller than the above, and exceedingly delicate in its structure. On the head, we notice two eyes, placed transversely (Fig. 13. *b*). It is delineated of its natural size, in Fig. 11, 12. Both the back and belly is of a dusky grey, profusely sprinkled with minute black specks.

The stomach of the *G. tuberculata*, like that of the leech, is divided into several cells or partitions (Fig. 10. *d. e.*) with their extreme points verging towards the tail. The two last of these cells (*f*) are much longer than the rest, and terminate in two blind sacs. Between them, we notice the intestine, a tortuous tube extending to the anus, (Fig. 9. *e.*) a foramen above the rim of the circular sucker, or what constitutes the tail.

These animals, it has been asserted, when cut, or divided, are capable of reproduction, but this seems to rest on no just foundation.

Their food principally consists of the *water helices*, and here we see the great use of the projectile tubular tongue. The animal, from its tapering so much towards the head, is enabled to penetrate some considerable way into the hollow of the shell, and from the flexibility of its tongue, can follow its victim to the innermost recess of its habitation. A passage

from MULLER, upon this subject, may not be devoid of interest. "Spectaculum singulare præbuit hujus (*G. punctata*, olim *H. bioculata*) cum limace *Planorbis* conflictus: limacem ore prehendere molitur hirudo; ille se quam citissime cum strepitu ex aeris et aquæ subitanea pressione orto testa condit. Hirudo oram aperturæ tentare pergit, at *Limax* insidias sentiens, seque in domuncula hunc contra hostem minus tutum credens, animum capit, egreditur et festinanter ad summum vasculi marginem prorepando ex aqua aufugit. Miratu dignus *Limacis* instinctus salutem quærendi fuga in elementum *Hirudini* contrarium;

Omnibus ignotæ mortis timor, omnibus hostem
Præsidiumque datum sentire, et noscere teli
Vimque modumque sui.

Paucas tamen post horas, jubente natura, in aquam rursus descendere coactus, novo sese periculo obtulit, eique demum succubuit."

The *G. tuberculata*, and *G. punctata*, are oviparous; the former producing about 50, the latter about 20 at a birth. The same appearance is observed in these animals as in the *H. vulgaris*, when they deposit their ova, that is, a contraction of the body both above and below the abdominal foramen (Fig. 8.). There is, however, this difference; the *H. vulgaris* deposits its ova in a capsule, formed exterior to the body, whilst in these animals, the ova are simply excluded, held together by some gelatinous matter. From six to twelve ova are deposited at a time. When the whole of the ova are excluded, they are received into the abdominal pouch of the parent, where they constantly remain, until their contents are fully evolved. If the ova are removed, and kept in a vessel by

themselves, they do not prove productive ; hence there seems to be a necessity for this parental solicitude. This pouch, or cavity, is always conspicuous in the *G. punctata*, but in the *G. tuberculata*, only at the time of its producing young. When the young are excluded from the ova, they remain attached to this cavity by the tail, enjoying a free extent of motion with the rest of the body. In this position they are represented in Fig. 7. They frequently leave this pouch, but soon return, and again affix themselves. Shortly after birth, their *interanea* are filled with a cream coloured fluid, which, under the microscope, presents a most interesting and beautiful appearance. Whilst speaking of the stomach of the parent animal, I forgot to observe, that the *interanea* are only visible when food has been recently taken. I mention this circumstance, that I may not be supposed to labour under a mistake, in the view I have given of this organ. MULLER himself indeed confesses, that he was a whole month (although assisted by the microscope) before he discovered it, yet he with much candour adds, that he afterwards very frequently saw it, even with the naked eye.

JAMES RAWLINS JOHNSON.

London, June 18, 1817.

EXPLANATION OF PLATE XVII.

Fig. 1, 2. The *G. tuberculata*, natural size, front view.

Fig. 3, 4. Ditto, back view.

Fig. 5. The tubular tongue (magnified): that portion from *a* to *b* is usually protruded from the mouth, the letter

c refers to the root or the expanded part of the tongue, or what, more properly speaking, constitutes the oesophagus.

Fig. 6. Shows the arched back the *G. tuberculata* presents, when in motion.

Fig. 7. Shows the abdominal pouch of this animal with the young affixed to it by their tail, enjoying free motion with the rest of the body.

Fig. 8. Its appearance when about to deposit its ova; *a*, the mouth; *b*, the contracted portion containing the ova to be then excluded; *c*, the remaining portion of the ova left in the abdominal cavity; *d*, the tail.

Fig. 9. The *G. tuberculata* magnified, showing, *a*, the tubular tongue; *b*, the eyes; *c*, the double longitudinal row of white tubercles; *d*, the serrated margin; *e*, the anus.

Fig. 10. The back part of the same animal, showing, *a*, the tubular tongue projected from the mouth; *b*, the oesophagus; *c*, the abdominal foramen; *d*, the alimentary canal or stomach; *e*, the lateral cells of the stomach; *f*, the two last long cells; *g*, the intestine; *h*, the sucker, or tail.

Fig. 11. *G. punctata*, natural size, front view.

Fig. 12. Ditto, back view.

Fig. 13. The same animal, magnified, showing, *a*, the projectile tubular tongue; *b*, the eyes; *c*, the abdominal pouch; *d*, the tail; *e*, the serrated margin.

Fig. 1.



Fig. 2.



Fig. 3.



Fig. 4.



Fig. 5.



Fig. 6.



Fig. 7.



Fig. 8.



Fig. 9.

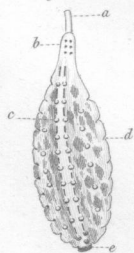


Fig. 10.



Fig. 11.



Fig. 12.



Fig. 13.

